

INDUS GT™

**GT Data Manager
for Commodore**

COPYRIGHT © 1984 by INDUS SYSTEMS INC.

This manual is published and copyrighted by Indus Systems Inc. All rights are reserved. This document may not, in whole or part, be copied, photocopied, reproduced, translated or reduced to any electronic medium or machine readable form without prior written consent of Indus Systems Inc.

The word *Commodore* and the *Commodore* logo are registered trademarks of *Commodore Business Machines*. *Commodore Business Machines* was not in any way involved in the writing or other preparation of this manual, nor were the facts presented here reviewed for accuracy by that company. Use of the term *Commodore* should not be construed to represent any endorsement, official or otherwise, by *Commodore Business Machines, Inc.*

The GT Data Manager

Copyright (c) 1983 Charles D. Arceneaux
Daedalus Digital, Inc., Lafayette, LA 70503

The GT Data Manager will run on either the VIC 20 or Commodore 64 computers. The VIC 20 requires at least 8K of expansion memory. A printer and either a disk drive or datasette are also necessary.

TABLE OF CONTENTS

1. WHAT IS THIS GT DATA MANAGER THING?.....	3
2. GETTING STARTED.....	4
3. PROGRAM CONVENTIONS.....	7
4. ERROR RECOVERY.....	8
5. DEFINING A FILE STRUCTURE.....	9
6. LOADING AND SAVING FILES.....	10
7. PRINTING AND PRINT TEMPLATES.....	11
8. ORDER (SORT) FEATURE.....	14
9. FIND (SEARCH) FEATURE.....	15
10. USING A GT DATA MANAGER FILE FROM BASIC.....	16
11. ADAPTING FOR OTHER PRINTERS.....	16

1. WHAT IS THIS GT DATA MANAGER THING?

The GT Data Manager is a user configurable, memory resident, data base program with print-formatting and sorting features for the VIC 20 and Commodore 64 computers. To use the GT Data Manager you need a printer and either a disk drive or a cassette deck. If you are using a VIC 20, you will need at least 8K of memory.

A "database" is a program or system designed to make the input, storage, retrieval, and printing of data more convenient. To facilitate this, a data base file is set up differently than an ordinary file. In an ordinary computer data file, there is nothing intrinsic to the file that indicates its meaning, whereas a database file stores "meaning" information with the data. This allows the data base program to react differently for each different file it processes.

By "user configurable" we mean that the user can specify the meaning and size of the data fields in a file. This way, if you want a home inventory program, you only have to follow the simple directions in this instruction book and you have a custom home inventory program -- the same for Christmas card lists, commonly used phone numbers, a catalog of your barbed-wire or stamp collection, an index to your ladies' auxiliary cookbook, or any other listing or filing application you can think of.

By "memory resident" we mean that the entire program, plus any data file, can reside in memory all at the same time. This gives the program some major advantages: The primary advantage is that, for most operations the GT Data Manager is very quick -- much quicker than if the file were disk or tape resident during a processing session.

"Print-formatting" provides a simple-to-use way of producing lists or labels from any data base file. A printing template of the desired format is defined by the user and can be stored on disk or tape for reuse at any time. The format routines are powerful and flexible, and will allow many different kinds of listings. Alternately, the GT Data Manager files can be read from a BASIC program in a manner very similar to regular data files.

The "sorting feature" allows you to sort the file on any field. Sort allows discrimination between numeric and alphabetic data, and will force all subsequent additions into the sort order.

2. GETTING STARTED.

The GT Data Manager is suitable for a number of small filing jobs around a home or small business. Once you decide what you will want to file on the GT Data Manager, you have to decide what the record structure will be like.

Creating a record structure is easier if you use a record structure work sheet such as illustrated here:

FIELD ID	FIELD NAME	FIELD SIZE
A		
B		
C		
D		
E		
F		
G		
H		
I		
J		
K		
L		

Notice that twelve fields are available in each GT Data Manager record.

SAMPLE APPLICATION:

One application that the system could be used for is to list the names of books in a book collection. Suppose you are working on a collection of the complete works of some author -- say, for example, Earl Stanley Gardner. For this collection, you might want to make a list of his complete works, along with fields for whether or not you have it in your collection, what edition you have, what price you paid for it (or would be willing to pay for it), what condition it is in, and what pen name he wrote it under. As such, the data structure work sheet might look like this:

FIELD ID	FIELD NAME	FIELD SIZE
A	Owner-Flag	1
B	Title	32
C	Edition	2
D	Condition	4
E	Cost	8
F	Pen Name	8

This is a good start. But once we have gotten this far, we need to look at the fields closely and decide if this is really what we want. Ask yourself if you really need all the fields, or if they are the right size. After careful reflection, we might come up with this:

FIELD ID	FIELD NAME	FIELD SIZE
A	Owner-Flag	1
B	Title	25
C	Edition	5
D	Condition	4
E	Cost	8
F	Value	8
G	Pen Name	5

After a survey of some of the books in my collection, I found that if I abbreviated "The Case of the" as TCOT, then the longest title was 22 characters, so I chose 25 for good measure. Then I decided that two characters was not enough to properly designate the edition, so I expanded that to five. Furthermore, I decided that just having a "Cost" field was too ambiguous, so I established a second field -- cost meaning what I paid for it, and value having two meanings: What I am willing to pay for it if I don't have it, and what it's worth if I do have it. Finally I shortened the pen name field. I felt sure I could abbreviate any pen name he used in five characters or less.

We are now ready to sit down at the computer. Load "GTDATA" and run it. The GT Data Manager initial menu will show on the screen. This menu has just two items: "New File" or "Old File". An Old File refers to one that was created during a previous session and saved to the disk or tape. Since this is our first session, we need to pick the New File option by pressing the N key.

The title "Fields Definition" will appear on the screen along with a prompt to enter the field A name. Type "Owner-Flag" and press RETURN. This will cause a prompt that says "Field A Size:" to appear. Type in the field size, in this case "1" and press RETURN. The result of this action will be for the "Field B Name:" prompt to appear. Continue to enter the names and lengths of each field down through "G".

When you have entered all the field names and sizes, respond to the main prompt by pressing the RETURN key. This will list the structure definition you have entered so far and give you a chance to change it. Follow the menu at the bottom of the page. This will allow you to change an entry, delete an entry, or start entering records.

Pressing the E key will put you into the ADD mode. This mode allows you to add records to the file in memory. In this mode a message such as "206 Records 0 Used" appears at the top of the screen. The first number is the number of records your memory configuration can hold of this particular record. The second number is the number of records now in memory. If this display indicates less records than you need for your file, you will need to either redefine your records to be smaller, or plug more memory into your system.

The screen will display the prompt "Owner-Flag:". This is the name we gave to the first field in the record. The GT Data Manager is inviting you to type in the contents of this first field. Since I have decided to use an asterisk to designate a book that I own, I would press * followed by the RETURN key. This will cause the prompt for the next field to appear: i.e., "Title:". Again, this is what we told the computer to call the second or "B" field. I should now type in "This Is Murder" and press RETURN.

Continue to enter all the fields as they are prompted. After the entire record in our example is entered, the computer will display this:

```
A Owner-Flag: *
B Title: This Is Murder
C Edition: '36pb
D Condition: Good
E Cost: .33
F Value: 1.00
G Pen Name: Kenny
```

Next Alter Main Menu

Pressing A followed by RETURN will allow you to correct any of the fields. Just pressing RETURN, or pressing the N key will allow you to input another record by prompting you for another Owner-Flag. Notice that this time the number shown next to the "Used" is 1. This line will be continuously updated as records are input into the system.

If you had pressed M, the GT Data Manager would have added the record to the end of the file and returned to the Main Menu. Another way to get to the Main Menu would be to press the up-arrow key, but this would not have added our record to the file.

The Main Menu gives you eight choices -- we will briefly review them here. More information about each of these choices is contained in the following chapters.

N New File: This will put the GT Data Manager into the file structure definition mode described above. Section 5 has more details. WARNING! This will destroy any data that you have in memory. If you are working with a file in memory, save it before using New File, Load File, or Quit options.

L Load File: This will allow you to load a previously saved file from the disk. See WARNING under New File. Also see Section 6 for more details.

S Save File: Will allow you to save a file on tape or disk. When a file is saved, the data structure definition, last sort order, and last printing template are also saved. See Section 6 for more details.

A Add a Record: Will put you into the record-add mode described previously.

O Order: Is used to sort the file. The sort will allow you to treat the data as alphabetic or numeric and will save the sort parameters. Once a sort is in effect, any subsequent adds to the file will place the new record in its correctly sorted place. Section 8 has more details on Order.

Q Quit: Returns control to BASIC. See WARNING under New File.

P Print: Will print the file on your printer. To do this successfully, you must supply a print template to the GT Data Manager. Section 7 has details on how this is done, and Section 11 has instructions for tailoring the print routines for printers other than Commodore's.

F Find: Will locate a record based on a numeric or character comparison. Find can also be used to scan all records in the file. See Section 9 for the details.

3. PROGRAM CONVENTIONS.

An effort has been made to keep the program operation consistent throughout. In this section we will examine some of the conventions that have been used and some of the ways a user can tune the program to his own desires.

There are two kinds of responses solicited by the program: menu responses and value responses. A value response occurs when the program wants to know something, such as the contents of a record field, or your choice of some program option. Sometimes the program will have a preferred answer in mind, a sort of default. In this case it will print the default on the screen and put the cursor on it. All you have to do is press RETURN. If you do not want the default, then you must type what you do want and press RETURN. In any case with value responses, you must press RETURN for

the computer to recognize your answer.

Menu responses are a different matter. For one thing, the legal responses will be displayed to you in reverse video. In all cases they would consist of one keystroke. It is not necessary to press the RETURN key when answering a menu. In fact, it is not a good idea to press it because it may disrupt a value response that is coming up next. In some cases, however, the RETURN key can be used in place of one of the given responses. These cases are discussed with each menu to which they apply.

The up-arrow key may be used at many places in the program to return to the Main Menu. This is true of every menu response, even those that do not list the up-arrow as an option. It is also true of most value responses.

Color is only used in the program where it would improve the readability of the screen. The problem with color is that it doesn't look the same on all monitors. This is especially true with black and white monitors. If you wish to change colors, you may do so by altering line 1 of the program, then saving the program back on tape or disk. In this line there are two string variables defined: b\$ and r\$. b\$ is the variable for most screen prints and is normally set to blue. r\$ is the readability color, normally set to red. Consult your computer user's manual for the proper codes if you want to change these values.

4. ERROR RECOVERY.

Everything practically possible has been done to insure the proper, error free operation of the GT Data Manager program. However, to be realistic about this, errors can happen that will bomb the GT Data Manager. If one occurs, an error message will print on the screen followed by the word READY and a flashing cursor. If this happens, don't panic. There are three simple things you must do to successfully recover from most errors:

1. Get back into the GT Data Manager by typing "goto3" and hitting the RETURN key. This will put you into the Main Menu without losing any variables.
2. Save the file in memory (if there is one) by pressing S and giving the proper response to the questions Save asks. If you are using a disk drive, it may be that the disk drive has become unavailable as a result of the error. If this has happened, this step will fail and you should go back to step one and start over, this time trying to save on tape.
3. Turn your system off and start over again from power up.

Of course, there are some things that might happen that are not serious errors, or that are not the program's fault. One example of this is if your house lights blink. If this happens and it affects the computer, you will lose everything in memory at the time. If you live in an area where this is likely to happen, you should get a battery back up unit for your computer, or you should save the file often so you won't lose much.

Having at least three generations of your data files is a good idea in any case. If you are using tape, have three data tapes for each file and rotate them. If you are using disk, have three file names on the disk, and rotate the name to which you save it. Also, if you have a disk, it would be a good idea to make at least one tape copy of each GT Data Manager file for additional backup. These suggestions are not specific to the GT Data Manager; they would be a good practice to follow on any data processing system.

Another problem you might encounter is inadvertently hitting the RUN STOP key while running the program. If this happens merely type "cont" and hit the RETURN key. This will put you back in the program at the place where you left it.

If your system responds with a "can't continue" error message when you try the cont command, try the goto3 command described above.

Sometimes you will see the message "?extra ignored" flash on the screen. A common cause of this is that the GT Data Manager cannot accept either a comma or colon as part of a string input. You can get around this by using some other character at places where you might usually use a comma or a colon. Possible substitutes are the semi-colon (;), the slash (/), and the dash (-).

Slower program operation occurs as memory becomes full. This is because BASIC needs to take a break occasionally to reorganize its string space. The best thing to do about this is to always run the GT Data Manager with maximum memory. Another thing you can do is to turn off the sort key. This is done by selecting the O (for Order) option from the Main Menu, then responding to the "Alpha or Numeric (A/N)" question with an up-arrow. This will cancel the sort key and cause the addition of new records to go faster because it will add them to the end of the file. Then you can sort them into the desired order after you are through adding records.

5. DEFINING A FILE STRUCTURE.

The file structure definition mode may be entered from either the Initial Menu or the Main Menu. If a file is already in memory, the GT Data Manager will ask you if you want it deleted from memory. After deletion, you will be presented with the

Initial Menu. This is because the process of deletion causes the GT Data Manager to forget where it was -- it puts the program back into the same state it was in when it was first run. You simply have to reselect the N for New File option at this point and proceed normally.

Section 2, GETTING STARTED, has almost everything you need to know about defining a file structure. You should read it and work through the example before using the GT Data Manager for the first time.

Several things are not touched on in Section 2. First of all, fields, are limited to 87 characters each, and the total record length must not exceed 174 characters. These are not arbitrary limits, but allow the GT Data Manager to be more efficient with its data handling.

Once you start entering data, you cannot change the structure of any particular file. If you will be using the file for a very long time, take a lot of thought in designing it. Use the record structure work sheet illustrated on page 4. Then enter three or four records and experiment with them. After you have done this, let it sit for at least a day before entering the bulk of your data.

6. LOADING AND SAVING FILES.

Files may be loaded from either the Initial Menu, or the Main Menu. From the Initial Menu, the menu option is O for Old File; from the Main Menu, the menu option is L for Load File. Both options mean the same thing. If a file is already in memory, the GT Data Manager will ask you if you want it deleted from memory. Deletion of the memory file will also reset the GT Data Manager to the state it was when it was initially run. You have to reselect the O for Old File option at this point and proceed normally.

Both the Load and Save present you with the same dialogue. The first question of this dialogue is "Tape or Disk?D" with the cursor left on the D. If you are loading from, or saving to disk, press RETURN to proceed. Otherwise, press the letter T followed by the RETURN key.

If you have selected D for disk, you will then be asked if you want a directory listing. Here the default response is N. If you want a directory listing, press Y followed by the RETURN key. The program will read through the disk directory and print the names of all sequential files on the screen. (Even when saving a file, it is a good idea to use the directory feature. If you give a save file name that matches one that is already on the disk, the GT Data Manager will think you want to write a new version of that disk file, and will write over the version previously on the disk, destroying it.)

Finally, you will be presented with a display of what the program understood your response to be. The display will look something like this:

```
Device = D
File = books
Right? Y
```

If this is right, all you have to do is press RETURN for the computer to start reading or writing. Otherwise, press N followed by RETURN to start over at the "Tape or Disk?D" question. Of course, you can press the up-arrow key to return to the Main Menu.

The GT Data Manager puts an "s=" before the sort key, a "p=" before the print template, and a "d=" before the data when it is writing a file. While reading the file back in, it will display these symbols on the screen as it comes to them.

7. PRINTING AND PRINT TEMPLATES.

To print a GT Data Manager file, you need to provide a print template and a select option to the program. When you select print by pressing P from the Main Menu, the dialogue that follows will ask you about both of these things.

A print template is a way of showing in symbolic form what the program should print. Since it is in symbolic form, and it is meant for the program to understand it easily, it is necessarily very cryptic. There are a few simple rules that the computer follows when interpreting the template. Here they are:

1. Any lower case letter between "a" and "l" is taken by the program to be a field identifier. When the print-formatter comes across one of these, it prints the contents of that field at the current print position.
2. Any other letters, special characters, or spaces in the print template, it treats as literal data, and sends to the printer exactly as it appears in the template.
3. If the template contains more than 11 lines, only 11 of the lines can contain literals or data. This will be the first 11 lines printed.
4. If the template contains one or two lines, the program will attempt to provide a heading at the top of each 66 line page. This heading will consist of the page number, and the names of the fields on the first line of the print template.

Note that the print template is the only routine that differentiates between upper and lower case letters. For all other responses in the GT Data Manager, the results will be the same for upper and lower case answers.

The first question of the dialogue will be "Use Last Print?Y". This is asking if a print template already exists. This template could have been read off the disk when the file was loaded or it could have been provided earlier in the program. If the RETURN key is pressed at this question, the program will skip directly to the records selection segment.

Otherwise, the question "Lines per Entry?6" will be displayed. Six is the default for this question because that is the typical number of lines in a label. If you desire a listing, you probably would want to select one or two lines.

Next, the file structure is printed out followed by the query "Line 1 Template". The program is inviting you to type in the literals and field ID's that make up the first line of the template. If you typed in "a b", the print-formatter will print the contents of field "a" against the left margin, a space, then the contents of field "b".

If you had a file structure like this:

```
a 20 Name
b 24 Address
c 16 City
d 2 State
e 5 Zip
```

And you wanted mailing labels, the template might look something like this:

```
Line 1: a
Line 2: b
Line 3: c d e
Line 4:
Line 5:
Line 6:
```

This would print a label that would look something like this for each record printed:

```
Daedalus Digital
111 Rena Dr.
Lafayette LA 70503
```

However, if you wanted a double spaced listing of addresses, then you could give it a two line template that looked like this:

```
Line 1: a b c d e
Line 2:
```

And the output would look like this:

Name	Address	City	State	Zip
Daedalus Digital	111 Rena Dr.	Lafayette	LA	70503
Any Others	123 Street	Small Town	OH	54321

After you have entered all the lines, the program will list the template out to you and ask "Change anything/Enter Line # or 0?0". If you enter a line number before pressing RETURN, you will be able to change any line in the template.

The program will give you a choice between printing all records in the file, and printing selected records. Specifying the selection parameters is identical to the Find operation described in Section 9.

If you need to indent one or more lines of your listing, you can use an undefined field ID in the first column. This will have the effect of guarding spaces that come before the first printable field. In the case of the mailing labels shown above, a first line template of "g a" would have printed the name field starting in column 10 of the label. The other lines could have been coded likewise.

Finally, the illustration shown below depicts the record structure and print template for a home inventory list. This is exactly what the screen would look like before going to the print select sequence:

a 14 Item
b 10 Brand
c 12 Location
d 8 Value
e 10 Serial #
Line 1 Template
?a b c \$d #e

Using the left-arrow key:

If during printing you desire to either break out of printing or to restart the listing, then hold down the left-arrow key until the printer stops. The program will give you a choice between continuing, restarting the print from the beginning, or exiting to the Main Menu. If you have any trouble lining up the forms, you should use the left-arrow key to repeatedly restart the print until your form's alignment is perfect.

8. ORDER (SORT) FEATURE.

The Order routine will sort the file in memory on any one field. The first thing Order needs to know is whether it will be an alphabetic or numeric sort. If you respond with A, then an alphabetic sort will be performed; otherwise a numeric sort is done.

If the "Alpha or Numeric" question is answered with an up-arrow, then any sort parameter that already exists will be nullified. This has the effect of placing any subsequently added records at the end of the file rather than sorting them into their proper place in the sort order. You might want to do this to save time while entering new records.

The only other thing Order needs to know is the field ID. After entering this and pressing RETURN the sort will begin.

Once a sort has been done, then any new records added to the file will be inserted in sort order. However, if there is no sort key in effect, new records will be added to the end. This might be where you want your new records to be added. If so, then call up the Order routine and answer the alpha or numeric question with an up-arrow. This will cancel the sort key.

9. FIND (SEARCH) FEATURE.

Find presents the user with seven different choices. It is thought that most of these are self-explanatory, so we will only go into choice #4, "Character Match".

On choices 1 through 3 and 5 through 7, the entire field is compared with the search key, but on choice #4, an exact match is sought anywhere within the field designated. Thus, if you specify "AB" as your search key, the program would match on "ABNER", "DAB", and "789AB".

The same search routine is also used for the print subroutines provided selected records are specified.

When a qualifying record is found, it will be displayed to the user along with a menu. The C or Continue option on this menu will allow the program to find the next record that satisfies the search criteria. The RETURN key gives the same results.

The N or Next option will cancel the search and present to the user the next physical record in the file.

The A or Alter menu option will allow the user to alter any field in the found record.

The D or Delete option provides a way to delete unwanted records from your file. The question "Are you sure?N" will be displayed if this option is selected, in case your finger slipped. You must press the Y key followed by the RETURN key to complete the deletion process.

The R option stands for Rekey. It will return to the entrance of the Find option to allow you to specify entirely new search parameters.

Of course, the up-arrow is also provided to allow a quick exit back to the Main Menu.

10. USING A GT DATA MANAGER FILE FROM BASIC.

The best way to show how to use a GT Data Manager file from another program is by example. You can adapt the following program to your own needs:

```
10 DIM N$(11),L(11),S(11)
20 INPUT"FILE NAME";F$
30 OPEN1,8,2,F$+"",S,R":REM ASSUME DISK FILE
40 OPEN4,4,7:REM OPEN PRINTER
50 FOR I=0 TO 11:INPUT#1,N$(I),L(I):NEXT
60 L=0:FORI=0 TO 11:S(I)=L:L=L+L(I):NEXT
70 INPUT#1,L$
80 IFL$<>"D=" THEN 70
90 J=1
100 INPUT#1,L$
110 IFL$="*END" THEN END
120 IF L>87 THEN INPUT#1,M$:L$=L$+M$
130 PRINT #4,J
140 FORI=0 TO 11
150 IFL(I)=0 THEN NEXT 180
160 PRINT#4,N$(I);
170 PRINT#4,"=";MID$(L$,S(I),L(I))
180 NEXT
190 PRINT#4
200 GOTO 100
```

The only thing this program has done that the GT Data Manager print-formatter cannot do is to number each record. Otherwise, this print-formatter will print each field's name next to the contents of that field. With just a few modifications, this program could easily do a number of other jobs. Among these might be the summing of certain numbers, the printing of summary lines, or the merging of a GT Data Manager file with a word processing file. The only limits are your imagination and your programming skills, so good luck!

11. ADAPTING FOR OTHER PRINTERS.

If you use something other than a standard Commodore printer, you may have to alter the print routines. All the lines you may need to alter have been conveniently placed within the first seven lines of the program.

Line #4 is the open command.

Line #5 is the carriage return/line feed instruction.

Line #6 is the instruction for printing a field. The field to be printed has been placed into the variable q\$.

Line #7 is the close file command.

To make the GT Data Manager work with your printer, you will first need an example with which to work. Find a program that will do simple printing, then alter the GT Data Manager to use the same device numbers, buffer numbers, and so forth.

Printer modification example #1: VIC-Tree interface.

To make this interface work, VIC-Tree must be made active in the system before the GT Data Manager is run, and line 4 must be changed to read:

```
4enable4:open4,4:return
```

Printer modification example #2:

If your printer cannot be set to auto-linefeed, then you will have to change lfn from 4 to 128. This would make lines 4 through 7 read like this:

```
4 open 128,4:return
5 print#128," ":ln=ln+1:return
6 print#128,q$;return
7 close128:return
```

NOTICE

Indus System Inc. reserves the right to make improvements in the product described herein at any time and without notice.

DISCLAIMER

Indus Systems Inc. shall have no liability or responsibility to the purchaser or any other person or entity with respect to any liability, loss or damage caused or alleged to be caused directly or indirectly by this manual or its use, including but not limited to any interruption in service, loss of business and anticipatory profits or consequential damages resulting from the use of this product.